A STUDY TO EVALUATE THE EFFECTIVENESS OF STRUCTURED TEACHING PROGRAMME ON KNOWLEDGE REGARDING PLACENTA CORD BANKING AMONG III YEAR BASIC B.SC NURSING STUDENTS AT SELECTED GOVERNMENT COLLEGES OF NURSING, HASSAN DISTRICT

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ABSTRACT

Background and Objectives

Placenta cord banking refers to the collection and storage of stem cells from the placenta, in addition to those found in cord blood, after the birth of a human baby. Stem cells from cord blood are much easier to get because they are readily obtained from the cord and the placenta at the time of delivery. As stem cell therapy breaks new ground and stem cells derived from the umbilical cord blood are proving to be such a boon to stem cell therapy, it is natural that the prospect of preservation of umbilical cord blood is gaining momentum. Thus, so called, placenta cord blood banking is being touted as insurance for life. This procedure is painless, safe and easy for both mother and baby.

Methods

An evaluative approach with one group pre-test post-test design was used for the study. Purposive sampling technique was used to draw 50 nursing students as the sample. Data was collected by administering a structured knowledge questionnaire on placenta cord banking. After collecting the data, structured teaching programme was administered to the subjects on the same day and on 7th day; post-test was conducted using the same questionnaire. The collected data was analyzed by using descriptive and inferential statistics.

Results

The results showed that the mean post-test knowledge score (80.1%) was higher than the mean pre-test knowledge score (37.3%). The calculated't' value (27.83) was higher than the table value (t49=1.96). This shows that the structured teaching programme was effective in improving the knowledge of nursing students on placenta cord banking. There was significant association between the knowledge score and the selected demographic variable in pre-test for the variables Religion (6.33*), Place of residence (4.96*) and previous exposure to information (5.82*) and in post-test for the variables religion (7.75*), education of father (8.84*), place of residence (4.68*) and previous exposure to information (6.75*) were more than the table value at 0.05 level of significance.*

Interpretation & Conclusion

The findings of the study have proved that structured teaching programme was effective in improving the knowledge of nursing students on placenta cord banking.

Key words: *Effectiveness; Structured teaching programme; Knowledge; Placenta cord banking.*

INTRODUCTION

"Grow their own bypass"

Pregnancy is a time when women and their partners are especially open to reflecting on their lifestyles and health care options. During the pregnancy, the temporary organ, placenta serves as the interface between the mother and the developing foetus carrying out functions like nutrient uptake, waste elimination, and gas exchange via the mother's blood supply that the foetus is unable to perform for itself during intrauterine life.[1]
Placentas are a defining characteristic of eutherian or "placental" mammals, but are also found in some non-mammals with varying levels of development.[3]
The word "Placenta" comes from the Latin word for cake, from Greek plakóenta/plakoúnta, accusative of plakóeis/plakoús – "flat, slab-like", in reference to its round, flat appearance in humans.[3]
Both the placenta and umbilical cord are also rich sources of stem cells. Banking stem cells from the placenta in addition to those found in cord blood significantly increases the number of prenatal stem cells that are collected and preserved to treat hematopoietic and genetic dirorders.[4]
Placenta cord banking refers to the collection and storage of stem cells from the placenta, in addition to those found in cord blood, after the birth of a human baby. Placental stem cells are those stem cells that are found only in the placenta and are collected after the blood from the umbilical cord is drawn. They are non-embryonic stem cells, as are those obtained from umbilical cord blood.[4]
Stem cells from cord blood are much easier to get because they are readily obtained from the cord and the placenta at the time of delivery. Umbilical cord blood is collected by a non-invasive and painless technique after detaching the umbilical cord from the newborn. The two methods in practice are the in-utero and ex-utero method, and ex-utero method is more commonly used. The in-utero method involves the collection of cord blood after the baby's delivery but before the delivery of placenta, whereas in the ex-utero method it is collected after the delivery of the placenta. Here immediately after the baby's delivery the umbilical cord is clamped from the newborn and a needle attached to a collection bag pre-coated with anticoagulant is inserted in the vein in the umbilical cord. The cord blood measuring approximately 40-150 ml is collected into the bag by gravity drainage. Collected cord blood is cryopreserved in liquid nitrogen and stored at around minus 196 degree centigrade in a cord blood bank for future transplantation[6].
These cryo preserved cord stem cells are thawed and transplanted into the recipient's body as like bone marrow whenever the need arises[7].
More than 45 diseases have now been treated using cord blood cells. These include malignant diseases like leukaemia,lymphoma, neuroblastoma and retinoblastoma, and several other non-malignant diseases as well. Non-malignant diseases are primarily inherited disorders of the blood and immune systems, or are genetic diseases affecting metabolism.[8]
In India, there are approximately 72000 births daily, which results in discarding 72000 umbilical cords a day. The storage of stem cell rich blood derived from these umbilical cords can prove to be the best possible insurance against life threatening diseases.[9]

STATEMENT OF THE PROBLEM

"A STUDY TO EVALUATE THE EFFECTIVENESS OF STRUCTURED TEACHING PROGRAMME ON KNOWLEDGE REGARDING PLACENTA CORD BANKING AMONG III YEAR BASIC B.SC NURSING STUDENTS AT SELECTED GOVERNMENT COLLEGES OF NURSING, HASSAN DISTRICT".

OBJECTIVES OF THE STUDY

1. To assess the existing knowledge regarding placenta cord banking among III year Basic B. Sc Nursing students.
2. To develop and evaluate the effectiveness of structured teaching programme on knowledge of III year Basic B. Sc Nursing students regarding placenta cord banking in terms of post test knowledge.
3. To compare pre test and post test knowledge score of III year Basic B. Sc Nursing students regarding placenta cord banking.
4. To find out the association between the knowledge score of III year Basic B. Sc Nursing students with their selected socio-demographic variables.

HYPOTHESES

The following hypotheses were formulated for the study:

H_1: There will be significant difference between mean pre test and post test knowledge score among III year Basic B.Sc. Nursing students regarding placenta cord banking

H_2: There will be significant association between post test knowledge score and selected demographic variables of III year Basic B.Sc. Nursing students.

RESULTS

Section-I: Analysis of overall and aspect wise knowledge scores of respondents on placenta cord banking

Table 1: Classification of Respondents on Pre test Knowledge level on Placenta Cord Banking.

Knowledge Level	Category	Respondents	
		Frequency	Percent
Inadequate	≤ 50 % Score	37	74.0
Moderate	51-75 % Score	13	26.0
Adequate	> 75 % Score	0	0.0
Total		50	100.0

The above table depicts the respondents on pre test knowledge level on placenta cord banking. It reveals that 74% of respondents had inadequate knowledge and 26% of the respondents had moderate knowledge and no one exhibited with adequate knowledge.

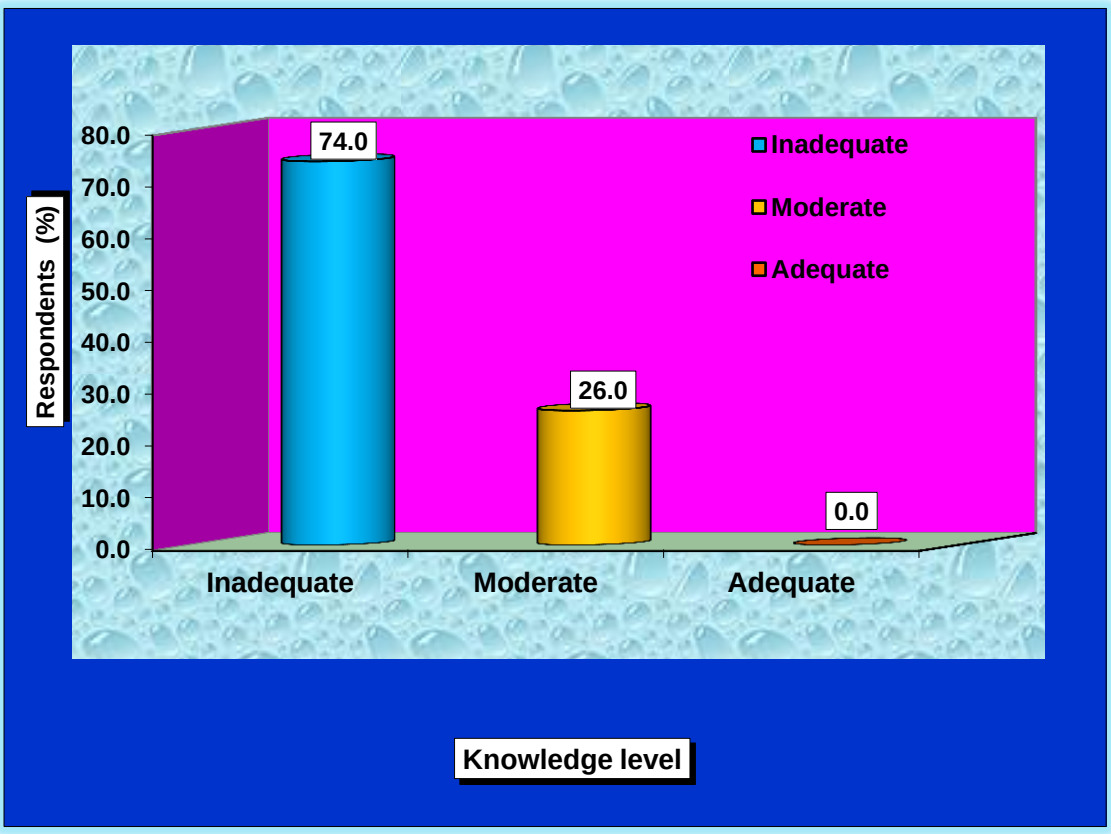

Figure -1: Classification of respondents based on Pre test Knowledge level on Placenta Cord Banking

Table 2: Classification of Respondents on Post test Knowledge level on Placenta Cord Banking

Knowledge Level	Category	Respondents	
		Frequency	Percent
Inadequate	≤ 50 % Score	0	0.0
Moderate	51-75 % Score	18	36.0
Adequate	> 75 % Score	32	64.0
Total		50	100.0

The above table depicts respondents on post test knowledge on placenta cord banking. It reveals that 64% of respondents were had adequate knowledge and 36% of respondents were had moderate knowledge.

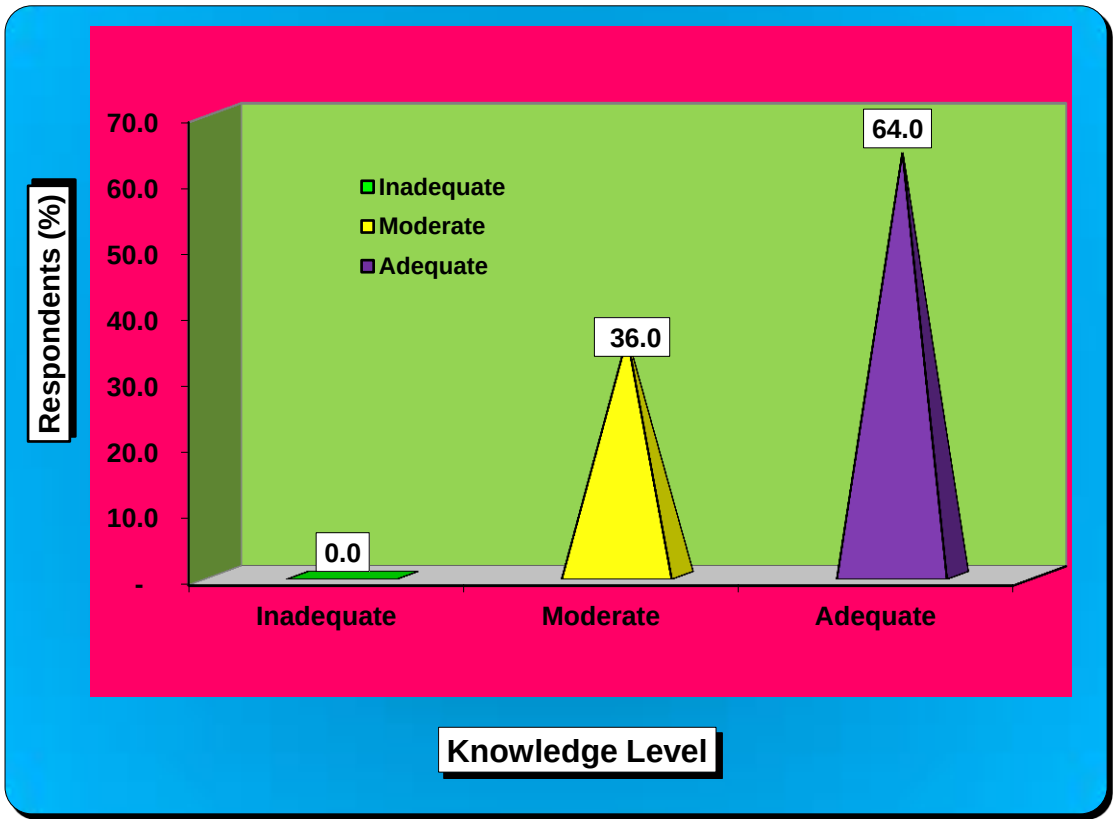

Figure .2: Classification of Respondents Post test knowledge level on Placenta cord banking

Table 3: Over all Pre test and Post test Mean Knowledge on Placenta Cord Banking N=50

Aspects	Max. Score	Respondents Knowledge				Paired 't' Test
		Mean	SD	Mean (%)	SD (%)	
Pre test	50	18.64	5.8	37.3	11.5	27.83*
Post test	50	40.06	3.0	80.1	5.9	
Enhancement	50	21.42	5.4	42.8	10.9	

* Significant at 5% level, t (0.05, 49 df) = 1.96

The above table depicts the overall mean post test score was 80.1% which was significantly higher than the pre test score of 37.3% with mean enhancement of 42.8%.

However the data subjected to statistical test indicates that statistically significant (t= 27.83) at 0.05% of significance. The paired't' test analysis shows that there is significant increase in post test knowledge level regarding placenta cord banking. Hence H_1 is accepted.

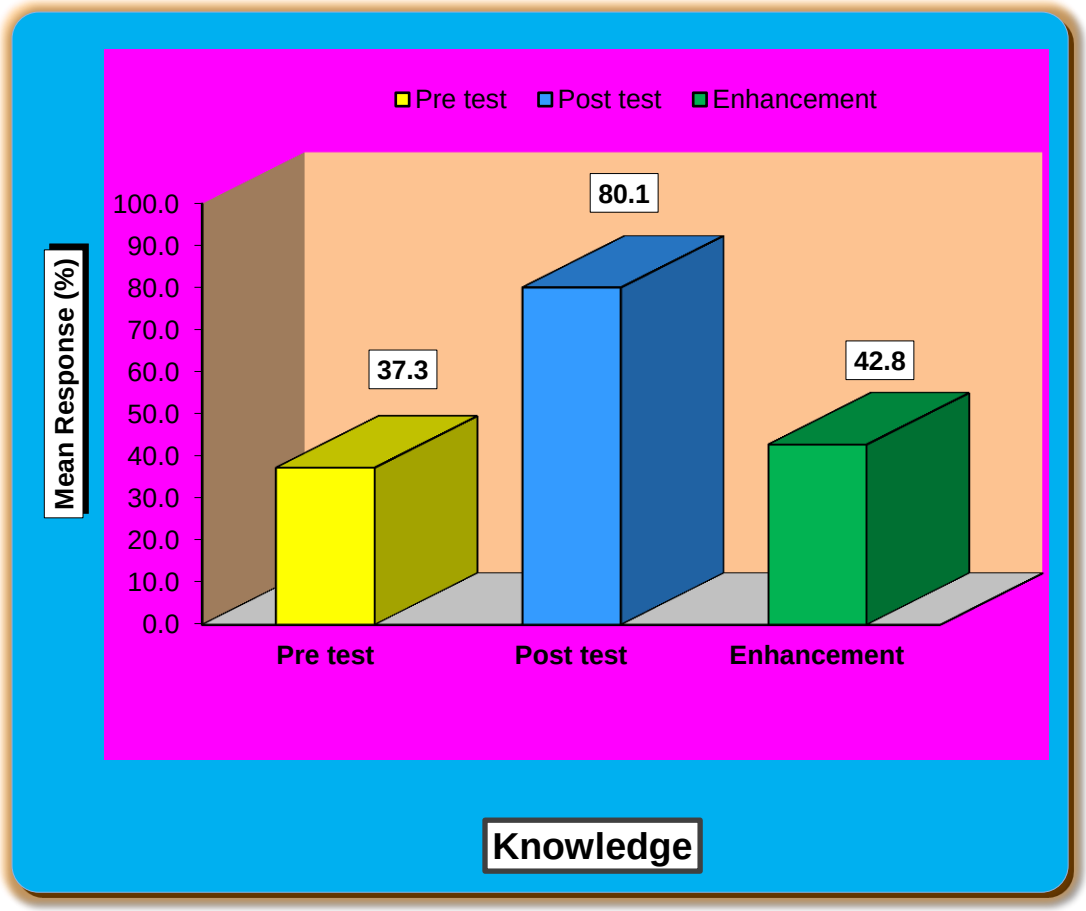

Figure 3: Over all Pre test and Post test Mean knowledge on Placenta cord banking

Table 4: Aspect wise Pre test and Post test Mean Knowledge on Placenta Cord Banking N=50

No.	Knowledge Aspects	Respondents Knowledge (%)						Paired 't' Test
		Pre test		Post test		Enhancement		
		Mean	SD	Mean	SD	Mean	SD	
I	Placenta and Umbilical cord	39.8	18.4	81.5	8.7	41.6	20.4	14.42*
II	Stem cells and Stem cell therapy	36.0	16.1	78.2	6.6	42.2	14.4	20.72*
III	Placenta cord banking	37.0	11.9	80.9	7.0	43.9	12.7	24.44*
	Combined	37.3	11.5	80.1	5.9	42.8	10.9	27.83*

* Significant at 5% level, t (0.05, 49df) = 1.96

The above table depicts the overall aspect wise mean percentage in post-test (80.1%) was higher than mean percentage of pre test (37.3%) with the enhancement of mean knowledge score 42.8%. the paired 't' test analysis shows that t=27.83* found more than the table value. Hence there is significant increase in posttest knowledge level than pre test knowledge level regarding placenta cord banking at 0.05 level of significance.

SECTION II :

COMPARISON BETWEEN PRE-TEST AND POST-TEST KNOWLEDGE SCORE OF RESPONDENTS AND EFFECTIVENESS OF STRUCTURED TEACHING PROGRAMME

a) Comparison of knowledge scores and effectiveness of structured teaching programme.

The following research hypothesis was stated

H_1 - There will be significant difference between mean pre test and post test knowledge score among III year Basic B.Sc. Nursing students regarding placenta cord banking

TABLE 5 :Mean, SD of aspect wise Pre test, Post test and enhanced Knowledge scores of respondents regarding placenta cord banking and calculated 't' value. N=50

No.	Knowledge Aspects	Respondents Knowledge (%)						Paired 't' Test
		Pre test		Post test		Enhancement		
		Mean	SD	Mean	SD	Mean	SD	
I	Placenta and Umbilical cord	39.8	18.4	81.5	8.7	41.6	20.4	14.42*
II	Stem cells and Stem cell therapy	36.0	16.1	78.2	6.6	42.2	14.4	20.72*
III	Placenta cord banking	37.0	11.9	80.9	7.0	43.9	12.7	24.44*
	Combined	37.3	11.5	80.1	5.9	42.8	10.9	27.83*

*** Significant at 5% level, t (0.05, 49df) = 1.96**

Above table depicts the overall aspect wise mean percentage in post-test (80.1%) was higher than mean percentage of pre test (37.3%) with the enhancement of mean knowledge score 42.8%. the paired 't' test analysis shows that t=27.83* found more than the table value. Hence there is significant increase in post-test knowledge level than pre test knowledge level regarding placenta cord banking at 0.05 level of significance.
The calculated paired 't' values based on pre and post test knowledge scores of all the aspects were more than table value at 0.05 level of significance with 49df. It indicates that differences between mean pre-test and post test scores are significant at 0.05 level of significance for all the aspects. Hence null hypothesis H_0 was rejected and research hypothesis H_1 was accepted with regard to all the aspects of knowledge.

Table 6 : Mean, SD, Mean% and SD% of overall Pre test, Post test and enhanced Knowledge scores of respondents regarding Placenta cord banking and calculated 't' value. N = 50

Aspects	Max. Score	Respondents Knowledge				Paired 't' Test
		Mean	SD	Mean (%)	SD (%)	
Pre test	50	18.64	5.8	37.3	11.5	27.83*
Post test	50	40.06	3.0	80.1	5.9	
Enhancement	50	21.42	5.4	42.8	10.9	

* Significant at 5% level, t (0.05, 49 df) = 1.96

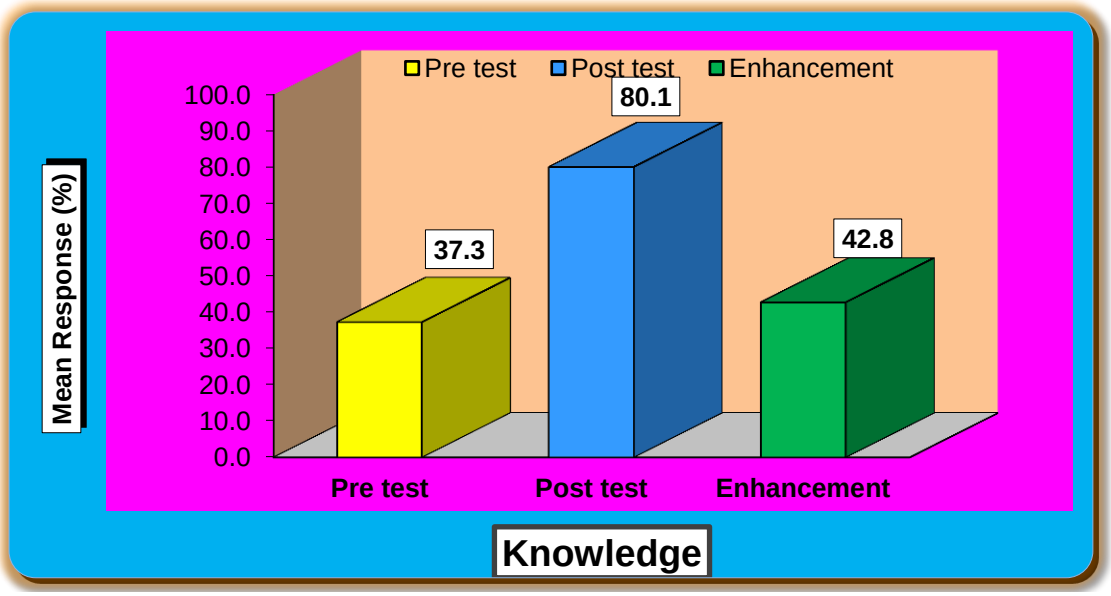

Figure 5 : Mean percentage of pre test and post test and enhanced Knowledge scores of respondents regarding Placenta cord banking.

Above Table and Figure depicts the overall mean post test score was 80.1% which was significantly higher than the pre test score of 37.3% with mean enhancement of 42.8%. However the data subjected to statistical test

indicates that statistically significant (t= 27.83) at 0.05% of significance. The paired 't' test analysis shows that there is significant increase in post-test knowledge level regarding placenta cord banking. Hence H_1 is accepted.

SECTION III :

ASSOCIATION BETWEEN SELECTED DEMOGRAPHIC VARIABLES AND KNOWLEDGE SCORES.

a) Association between selected demographic variables and knowledge level of respondents regarding Placenta cord banking.

H_2: There will be significant association between knowledge score and selected demographic variables of III year Basic B.Sc. Nursing students.

TABLE 7 :Association between selected demographic variables and knowledge scores regarding Placenta cord banking

Demographic variable	Category	Knowledge level								x^2 Value		P Value
		Pre Test				Post Test						
		Inadequate		Moderate		Moderate		Adequate				
		N	%	N	%	N	%	N	%	Pre test	Post test	
Age	20	33	75.0	11	25.0	16	36.4	28	63.6	0.19 NS	0.02^{NS}	P<0.05
	21	4	66.7	2	33.3	2	33.3	4	66.6			
Gender	Male	3	75.0	1	25.0	1	25.0	3	75.0	0.01 NS	0.23^{NS}	P<0.05
	Female	34	73.9	12	26.0	17	36.9	29	63.0			
Religion	Hindu	21	80.8	5	19.2	14	53.8	12	46.1	6.33*	7.75*	P>0.05
	Muslim	0	0.0	2	100.0	0	0.0	2	100.0			
	Christian	16	72.2	6	27.3	4	18.1	18	81.8			
Education of Father	Illiterate	3	100.0	0	0.0	1	33.3	2	66.6	1.38^{NS}	8.84*	P<0.05
	Primary	4	66.7	2	33.3	2	33.3	4	66.6			
	Higher primary	20	71.4	8	28.6	6	21.4	22	78.5			P>0.05
	Degree and above	10	76.9	3	23.1	9	69.2	4	30.7			
Education of Mother	Illiterate	1	33.3	2	66.7	0	0.0	3	100.0	2.88^{NS}	2.62^{NS}	P<0.05
	Primary	10	76.9	3	23.1	5	38.4	8	61.5			
	Higher primary	15	78.9	4	21.1	6	31.6	13	68.4			
	Degree and above	11	73.3	4	26.7	7	46.7	8	53.3			
Family Income/ month	Rs.5,000 &below	5	83.3	1	16.7	1	16.7	5	83.3	3.17^{NS}	1.12^{NS}	P<0.05
	Rs.5.001-10.000	11	61.1	7	38.9	7	38.9	11	61.1			
	Rs.10,001-15,000	12	75.0	4	25.0	6	37.5	10	62.5			
	Above Rs.15,001	9	90.0	1	10.0	4	40.0	6	60.0			
Place of Residence	Urban	11	100.0	0	0.0	7	63.6	4	36.4	4.96*	4.68*	P>0.05
	Rural	26	66.7	13	33.3	11	8.2	28	71.8			
Previous exposure to information	No	30	83.3	6	16.7	9	25.0	27	75.0	5.82*	6.75*	P>0.05
	Yes	7	50.0	7	50.0	9	64.3	5	35.7			
		37	74.0	13	26.0	18	36.0	32	64.0			

NS= not significant S= significant

IMPLICATIONS

IMPLICATIONS OF THE STUDY: The findings of the study has implications related to Nursing practice, Nursing education, Nursing administration, Nursing research regarding menstrual blood banking.

NURSING PRACTICE: Health education is an important tool for health care agency. It is one of the most cost effective interventions to promote healthy living. Thus, the computer assisted teaching programme regarding menstrual blood banking can be used to provide health education regarding prevention, promotion, and curative aspects to the general public.

NURSING EDUCATION: The health care delivery system at present is giving more emphasis on preventive rather than curative aspect. The findings of present study justify the involvement of computer teaching programme in Diploma and Bachelor level nursing curriculum.

NURSING ADMINISTRATION: The school administrators can assess the level of knowledge his/her subordinators or other students regarding menstrual blood banking by using knowledge questionnaire and to understand the learning needs of them and thus they can plan and organize educational programme for their subordinators or other students.

NURSING RESEARCH: It is essential to identify the present knowledge of nursing students regarding menstrual blood banking to know the extent of information that is necessary to taught. Extensive research must be conducted in the area to identify several more effective method of education.

REFERENCES

1. Park K. Preventive and Social Medicine.19th edition. Jabalpur, India: M/s Banarsidas Bhanot; 2007.pp: 301,534.
2. Stemcyte. A global cord blood therapeutics company. [Serial online] Available from URL: http://www.stemcyte.com/why-save-cord-blood/diseases-treated-with-stem-cells
3. Chapman, Audrey R., Mark S. Frankel, and Michele S. Garfinkel. Stem Cell Research and Applications: Monitoring the Frontiers of Biomedical Research. AAAS / ICS, November 1999. Available from URL: http://www.aaas.org/spp/sfrl/projects/stem/report.pdf
4. Panno, Joseph. Stem Cell Research: Medical Applications and Ethical Controversy. New York: Checkmark, 2006.
5. Stem cell. Wikipedia, the free encyclopedia. Available from URL: http://en.wikipedia.org/wiki/Stem_cell
6. Sethia Pavan P. Development and commercialization of menstrual blood stem cells banking [Serial online] 2011. Available from URL:http://etd.ohiolinic edu/view.cgi? acctnum =case 1303759438
7. Anwesha. Menstrual Blood Can Save Your Life. [Serial online] 2012. 15:45[IST] Available from URL: http://www.boldsky.com/health/disorders-cure/2012/menstrual-blood-stem-cells-031525.html
8. How blood stem cell banking empowers women. Available from URL: http://health.sify.com/how-blood-stem-cell-banking-empowers-women/
9. Verma Neha. Menstrual Blood Banking: Scope and Future. Health in focus [serial online] 2012. Available from URL: http://www.medindia.net/news/healthinfocus/Menstrual-Blood-Banking-Scope-and-Future-95616-1.html